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The influence of collisions on the temporary shape of stimulated echo hologram in gas

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Abstract

In this paper, we investigate the influence of collisions with the change of particle velocity direction in a gas on the reproduction of the temporary shape of the object laser pulse in the stimulated echo hologram response. Due to such collisions, the frequency shifts of the radiation of atoms in the gas randomly vary (spectral diffusion within the heterogeneously broadened line). It is shown, that such diffusion leads to the not correlated heterogeneous broadening in the gas at the different time intervals and the partial loss of system phase memory, which results in a partial loss of retrieved information encoded in the temporal form of the object laser pulse.

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